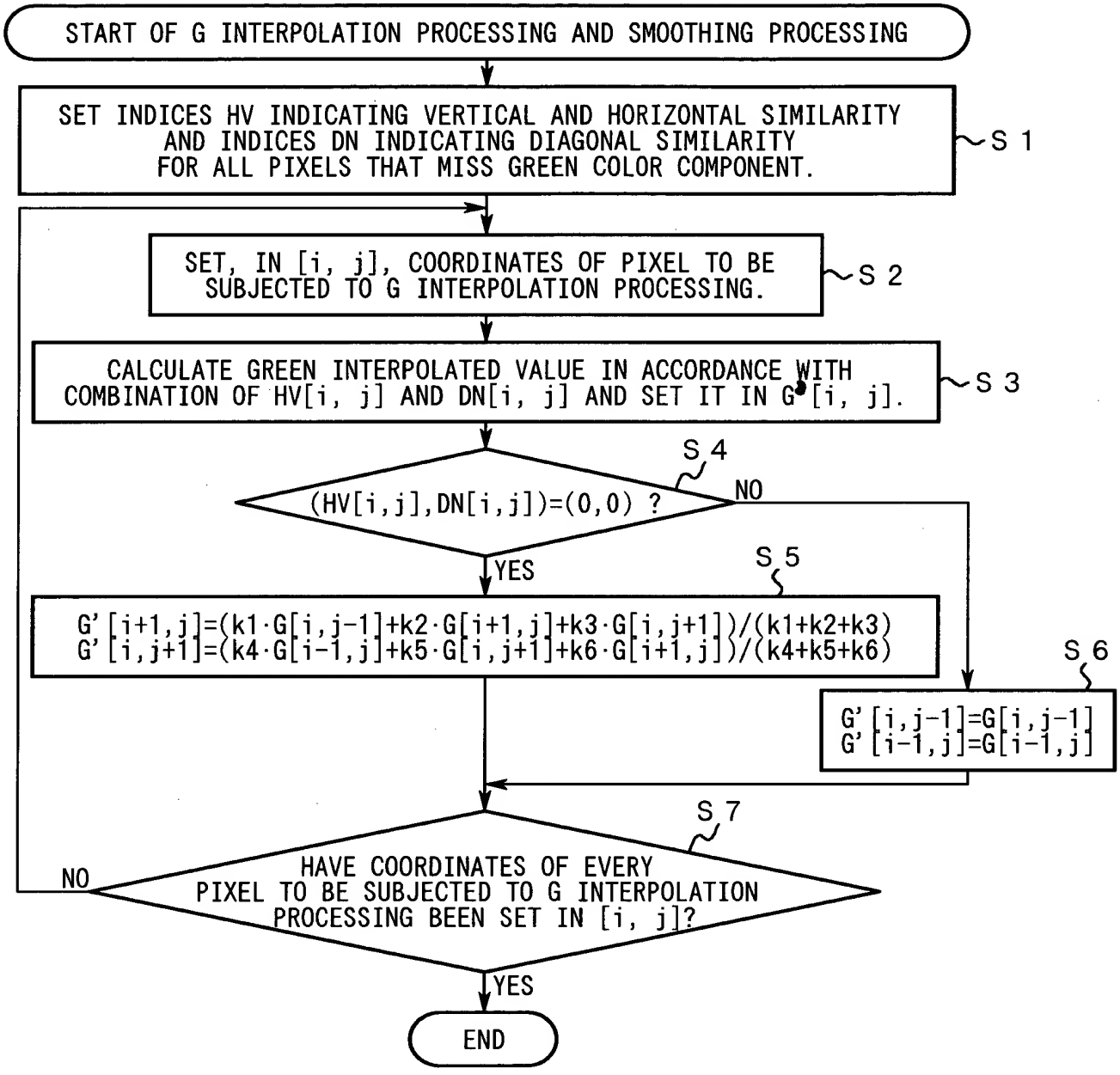
START OF G INTERPOLATION PROCESSING AND SMOOTHING PROCESSING
SET INDICES HV INDICATING VERTICAL AND HORIZONTAL SIMILARITY AND INDICES DN INDICATING DIAGONAL SIMILARITY FOR ALL PIXELS THAT MISS GREEN COLOR COMPONENT.
S 1
SET, IN [i, j], COORDINATES OF PIXEL TO BE SUBJECTED TO G INTERPOLATION PROCESSING.
S 2
CALCULATE GREEN INTERPOLATED VALUE IN ACCORDANCE WITH COMBINATION OF HV[i, j] AND DN[i, j] AND SET IT IN G'[i, j].
S 3
S 4
(HV[i,j],DN[i,j])=(0,0) ?
NO
YES
S 5
G'[i+1,j]=(k1·G[i,j-1]+k2·G[i+1,j]+k3·G[i,j+1])/(k1+k2+k3)
G'[i,j+1]=(k4·G[i-1,j]+k5·G[i,j+1]+k6·G[i+1,j])/(k4+k5+k6)
S 6
G'[i,j-1]=G[i,j-1]
G'[i-1,j]=G[i-1,j]
S 7
NO
HAVE COORDINATES OF EVERY PIXEL TO BE SUBJECTED TO G INTERPOLATION PROCESSING BEEN SET IN [i, j]?
YES
END

Fig. 3

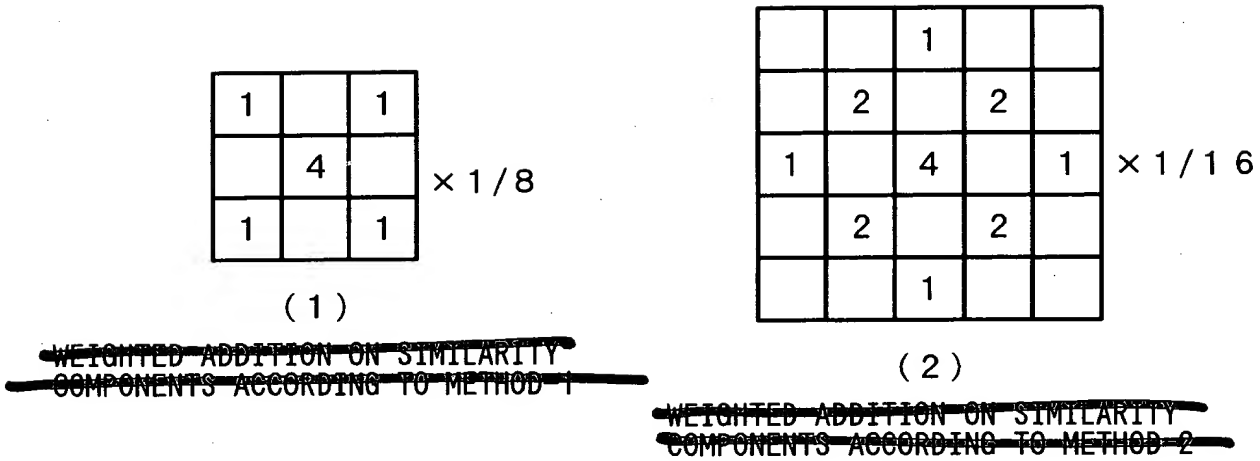
1 1
4
1 1
×1/8
(1)
WEIGHTED ADDITION ON SIMILARITY COMPONENTS ACCORDING TO METHOD 1
1
2 2
1 4 1
2 2
1
×1/16
(2)
WEIGHTED ADDITION ON SIMILARITY COMPONENTS ACCORDING TO METHOD 2

Fig. 4

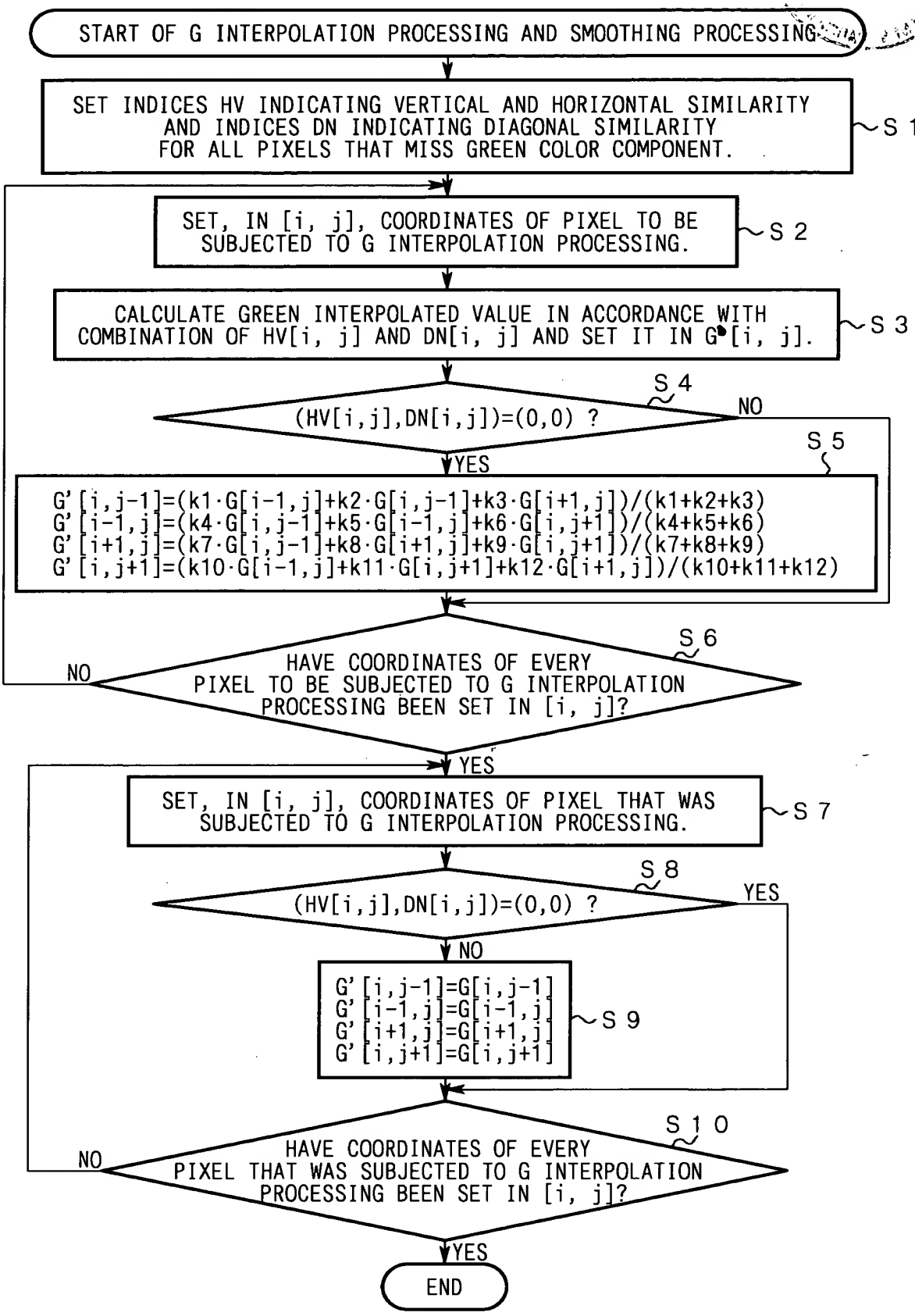
START OF G INTERPOLATION PROCESSING AND SMOOTHING PROCESSING
SET INDICES HV INDICATING VERTICAL AND HORIZONTAL SIMILARITY AND INDICES DN INDICATING DIAGONAL SIMILARITY FOR ALL PIXELS THAT MISS GREEN COLOR COMPONENT.
S 1
SET, IN [i, j], COORDINATES OF PIXEL TO BE SUBJECTED TO G INTERPOLATION PROCESSING.
S 2
CALCULATE GREEN INTERPOLATED VALUE IN ACCORDANCE WITH COMBINATION OF HV[i, j] AND DN[i, j] AND SET IT IN G'[i, j].
S 3
S 4
(HV[i,j],DN[i,j])=(0,0) ?
NO
YES
S 5
G'[i,j-1]=(k1·G[i-1,j]+k2·G[i,j-1]+k3·G[i+1,j])/(k1+k2+k3)
G'[i-1,j]=(k4·G[i,j-1]+k5·G[i-1,j]+k6·G[i,j+1])/(k4+k5+k6)
G'[i+1,j]=(k7·G[i,j-1]+k8·G[i+1,j]+k9·G[i,j+1])/(k7+k8+k9)
G'[i,j+1]=(k10·G[i-1,j]+k11·G[i,j+1]+k12·G[i+1,j])/(k10+k11+k12)
S 6
HAVE COORDINATES OF EVERY PIXEL TO BE SUBJECTED TO G INTERPOLATION PROCESSING BEEN SET IN [i, j]?
NO
YES
SET, IN [i, j], COORDINATES OF PIXEL THAT WAS SUBJECTED TO G INTERPOLATION PROCESSING.
S 7
S 8
(HV[i,j],DN[i,j])=(0,0) ?
YES
NO
G'[i,j-1]=G[i,j-1]
G'[i-1,j]=G[i-1,j]
G'[i+1,j]=G[i+1,j]
G'[i,j+1]=G[i,j+1]
S 9
S 10
HAVE COORDINATES OF EVERY PIXEL THAT WAS SUBJECTED TO G INTERPOLATION PROCESSING BEEN SET IN [i, j]?
NO
YES
END

Fig. 7

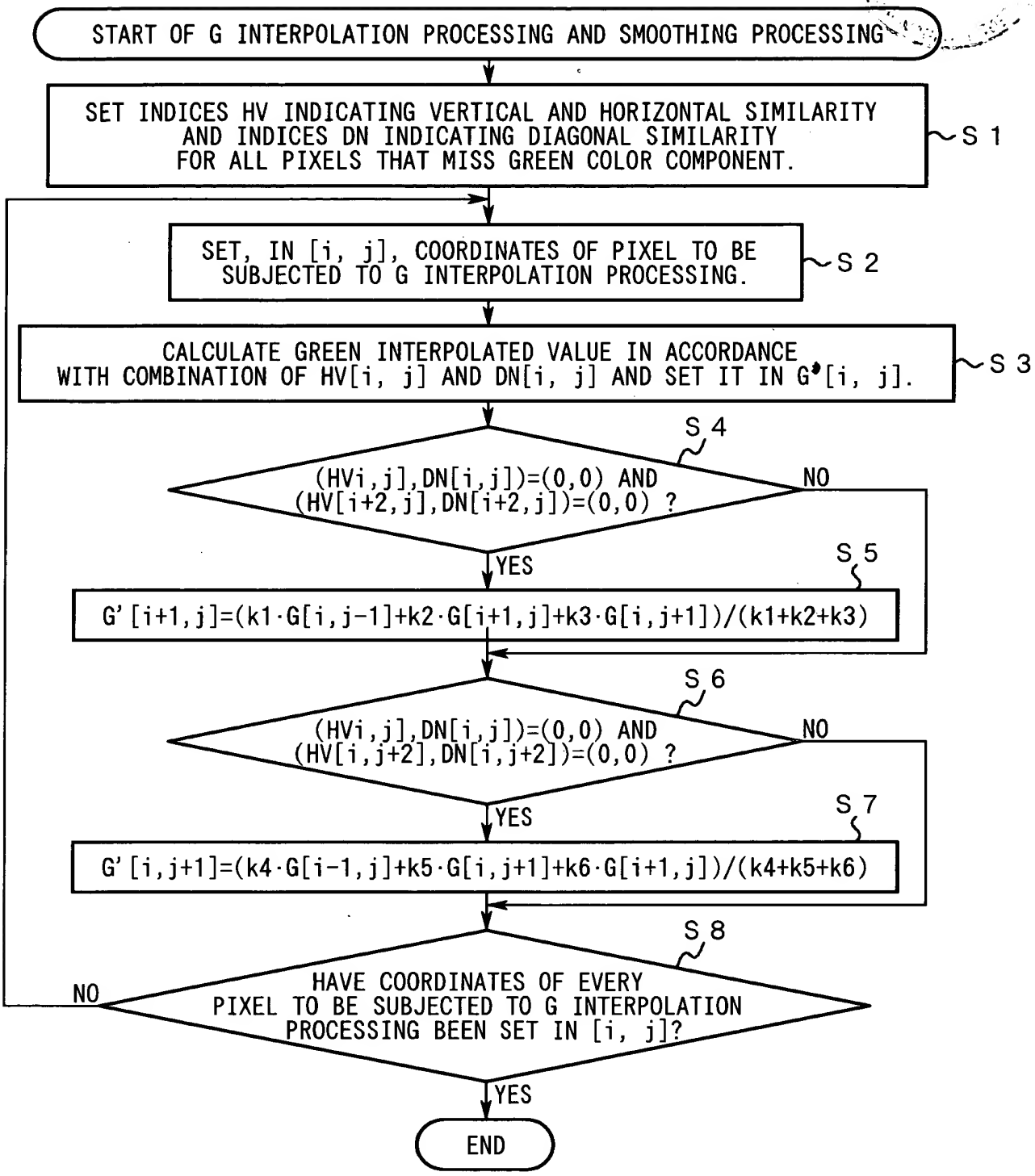
START OF G INTERPOLATION PROCESSING AND SMOOTHING PROCESSING
SET INDICES HV INDICATING VERTICAL AND HORIZONTAL SIMILARITY AND INDICES DN INDICATING DIAGONAL SIMILARITY FOR ALL PIXELS THAT MISS GREEN COLOR COMPONENT.
S 1
SET, IN [i, j], COORDINATES OF PIXEL TO BE SUBJECTED TO G INTERPOLATION PROCESSING.
S 2
CALCULATE GREEN INTERPOLATED VALUE IN ACCORDANCE WITH COMBINATION OF HV[i, j] AND DN[i, j] AND SET IT IN G'[i, j].
S 3
S 4
(HVi,j],DN[i,j])=(0,0) AND (HV[i+2,j],DN[i+2,j])=(0,0) ?
NO
YES
S 5
G'[i+1,j]=(k1·G[i,j-1]+k2·G[i+1,j]+k3·G[i,j+1])/(k1+k2+k3)
S 6
(HVi,j],DN[i,j])=(0,0) AND (HV[i,j+2],DN[i,j+2])=(0,0) ?
NO
YES
S 7
G'[i,j+1]=(k4·G[i-1,j]+k5·G[i,j+1]+k6·G[i+1,j])/(k4+k5+k6)
S 8
HAVE COORDINATES OF EVERY PIXEL TO BE SUBJECTED TO G INTERPOLATION PROCESSING BEEN SET IN [i, j]?
NO
YES
END

Fig. 8

CHART SHOWING EXAMPLE OF VALUES OF COLOR INFORMATION OF IMAGE HAVING CHECKERBOARD PATTERN

COORDINATES[X,Y]	i-3	i-2	i-1	i	i+1	i+2	i+3
j-3	B=150	G=200	B=150	G=200	B=150	G=200	B=150
j-2	G=100	R=150	G=100	R=150	G=100	R=150	G=100
j-1	B=150	G=200	B=150	G=200	B=150	G=200	B=150
j	G=100	R=150	G=100	R=150	G=100	R=150	G=100
j+1	B=150	G=200	B=150	G=200	B=150	G=200	B=150
j+2	G=100	R=150	G=100	R=150	G=100	R=150	G=100
j+3	B=150	G=200	B=150	G=200	B=150	G=200	B=150

(1)

CHART SHOWING EXAMPLE OF GREEN COLOR COMPONENT VALUES OBTAINED BY PERFORMING INTERPOLATION PROCESSING ON IMAGE HAVING CHECKERBOARD PATTERN

COORDINATES[X,Y]	i-3	i-2	i-1	i	i+1	i+2	i+3
j-3	150	200	150	200	150	200	150
j-2	100	150	100	150	100	150	100
j-1	150	200	150	200	150	200	150
j	100	150	100	150	100	150	100
j+1	150	200	150	200	150	200	150
j+2	100	150	100	150	100	150	100
j+3	150	200	150	200	150	200	150

(2)

Fig. 10